

M67001.AR.006946
MCB CAMP LEJUENE
5090.3a

VALIDATED DATA PACKAGE, A407473, MCB CAMP LEJUENE NC
2/13/2015
ENVIRONMENTAL DATA SERVICES

ENVIRONMENTAL
Data Services, Inc.**DATA VALIDATION SUMMARY REPORT
MCB CAMP LEJEUNE, NORTH CAROLINA**

Client: CH2M HILL, Inc., Virginia Beach, Virginia
SDG: A407473
Laboratory: Environmental Conservation Laboratories, Inc., Orlando, Florida
Site: MCB Camp Lejeune, LTM FY2015 Q1, Site 89, CTO-WE86
Date: February 13, 2015

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	IR89-GW91-14D	A407473-01	Water
2	IR89-GW101-14D	A407473-02	Water
3	IR89-GW94-14D	A407473-03	Water
4	IR89-GW98-14D	A407473-04	Water
5	IR89-GW98D-14D	A407473-05	Water
5RE	IR89-GW98D-14DRE	A407473-05RE1	Water
6	IR89-GW93-14D	A407473-06	Water
7	IR89-GW99-14D	A407473-07	Water
8	IR89-GW92-14D	A407473-08	Water
8RE	IR89-GW92-14DRE	A407473-08RE1	Water
9	IR89-GW92D-14D	A407473-09	Water
9RE	IR89-GW92D-14DRE	A407473-09RE1	Water
10	IR89-GW100-14D	A407473-10	Water
10RE	IR89-GW100-14DRE	A407473-10RE1	Water
11	IR89-GW90-14D	A407473-11	Water
11RE	IR89-GW90-14DRE	A407473-11RE1	Water
12	IR89-GW95-14D	A407473-12	Water
12RE	IR89-GW95-14DRE	A407473-12RE1	Water
13	IR89-GW87-14D	A407473-13	Water
13RE	IR89-GW87-14DRE	A407473-13RE1	Water
14	IR89-GW89-14D	A407473-14	Water
14MS	IR89-GW89-14DMS	A407473-14MS	Water
14MSD	IR89-GW89-14DMSD	A407473-14MSD	Water
15	IR89-GW96-14D	A407473-15	Water
15RE	IR89-GW96-14DRE	A407473-15RE1	Water
16	IR89-GW86-14D	A407473-16	Water
16RE	IR89-GW86-14DRE	A407473-16RE1	Water
17	IR89-GW97-14D	A407473-17	Water
17RE	IR89-GW97-14DRE	A407473-17RE1	Water
18	IR89-TB-121514	A407473-18	Water
19	IR89-EB-121614	A407473-19	Water

A full data validation was performed on the analytical data for seventeen water samples, one aqueous equipment blank sample, and one aqueous trip blank sample collected on December 15-16, 2014 by CH2M HILL at MCB Camp Lejeune in North Carolina. The samples were analyzed under

the Environmental Protection Agency (USEPA) "Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions".

Specific method references are as follows:

Analysis
VOCs

Method References
USEPA SW-846 Method 8260B

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods, the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," June 2008;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Holding times and sample preservation
- Gas Chromatography/Mass Spectroscopy (GC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Tentatively Identified Compounds (TICs)
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Overall Usability Issues:

There were no rejections of data. Overall the data is acceptable for the intended purposes as qualified for the deficiencies detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedences of QC criteria.

Volatile Organic Compounds (VOC)

Holding Times

- All samples were analyzed within 14 days for preserved water samples except the following.

Sample	Date Sampled	Date Analyzed	# of Days	Qualifier
5RE	12/15/14	01/06/15	22	J/UJ
8RE	12/15/14	01/06/15	22	J/UJ
9RE	12/15/14	01/07/15	23	J/UJ
10RE	12/15/14	01/07/15	23	J/UJ
11RE	12/15/14	01/06/15	22	J/UJ
12RE	12/15/14	01/07/15	23	J/UJ
13RE	12/15/14	01/07/15	23	J/UJ
15RE	12/15/14	01/07/15	23	J/UJ
16RE	12/15/14	01/07/15	23	J/UJ
17RE	12/15/14	01/07/15	23	J/UJ

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All %RSD and/or correlation coefficients and mean RRF criteria were met.

Continuing Calibration

- All %D and RRF criteria were met except the following.

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
12/26/14 (0929)	Vinyl chloride	45.3%	J/UJ	6, 7, 18

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
IR89-TB-121514	None - ND	-	-	-

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
IR89-EB-121614	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values except the following.

Sample ID	Surrogate	%R	Qualifier
5	Dibromofluoromethane	113%	J - Positive Results
	Toluene-d8	114%	
6	Dibromofluoromethane	135%	None - Sample ND
	Toluene-d8	115%	
7	Dibromofluoromethane	137%	None - Sample ND
	Toluene-d8	115%	
8	Dibromofluoromethane	137%	J - Positive Results
	Toluene-d8	115%	
9	Dibromofluoromethane	134%	J - Positive Results
	Toluene-d8	115%	
10	Dibromofluoromethane	139%	J - Positive Results
	Toluene-d8	114%	
11	Dibromofluoromethane	137%	J - Positive Results
	Toluene-d8	115%	
12	Dibromofluoromethane	135%	J - Positive Results
	Toluene-d8	117%	
13	Dibromofluoromethane	134%	J - Positive Results
	Toluene-d8	116%	
15	Dibromofluoromethane	136%	J - Positive Results
	Toluene-d8	115%	
16	Dibromofluoromethane	138%	J - Positive Results
	Toluene-d8	116%	
17	Dibromofluoromethane	135%	J - Positive Results
	Toluene-d8	115%	
18	Dibromofluoromethane	134%	None - Sample ND
	Toluene-d8	115%	
19	Dibromofluoromethane	133%	None - Sample ND
	Toluene-d8	116%	

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD sample exhibited acceptable %R and RPD values except the following.

MS/MSD Sample ID	Compound	MS %R/MSD %R/ RPD	Qualifier
14	trans-1,2-Dichloroethene	126%/127%/OK	None - Sample ND

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R) except the following.

LCS ID	Compound	%R	Qualifier	Affected Samples
4L26012-BS1	trans-1,2-Dichloroethene	130%	None	All ND or Already Qualified
	cis-1,2-Dichloroethene	127%	J	14
4L29007-BS1	trans-1,2-Dichloroethene	125%	None	Associated Sample ND

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- Several samples were reanalyzed outside holding time due to surrogate and/or LCS deficiencies. See Form Is for which results to use for reporting purposes.

Tentatively Identified Compounds (TICs)

- TICs were not reported.

Field Duplicate Sample Precision

- Field duplicate results are summarized below. The precision was acceptable.

Compound	VOCs			
	IR89-GW98-14D ug/L	IR89-GW98D-14D ug/L	RPD	Qualifier
Vinyl chloride	1.5	1.8	18%	None
trans-1,2-Dichloroethene	4.5	5.8	25%	
cis-1,2-Dichloroethene	150	170	13%	
Trichloroethene	27	26	4%	

Compound	VOCs			
	IR89-GW92-14D ug/L	IR89-GW92D-14D ug/L	RPD	Qualifier
Vinyl chloride	80	89	11%	None
trans-1,2-Dichloroethene	14	18	25%	
cis-1,2-Dichloroethene	170	230	30%	

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed:

Nancy Weaver

Nancy Weaver
Senior Chemist

Dated: 2/17/15

Data Qualifiers

- U = The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted Contract Required Quantitation Limit (CRQL) for sample and method.
- UJ = The analyte was not detected at a level greater than or equal to the adjusted CRQL. However, the reported adjusted CRQL is approximate and may be inaccurate or imprecise.
- J = The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the CRQL).
- J+ = The result is an estimated quantity, but the result may be biased high.
- J- = The result is an estimated quantity, but the result may be biased low.
- R = The sample results are unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
- NJ = The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

ORGANIC ANALYSIS DATA SHEET

IR89-GW91-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-01 File ID: 2LS013.D

Sampled: 12/15/14 09:20 Prepared: 12/24/14 00:00 Analyzed: 12/24/14 10:20

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: 4L24005 Sequence: AA31887 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	2.5	95	D	1.8	2.5	5.0
156-60-5	trans-1,2-Dichloroethene	2.5	47	D	1.8	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	2.5	280	D	1.3	2.5	5.0
79-01-6	Trichloroethene	2.5	24	D	2.2	2.5	5.0
79-00-5	1,1,2-Trichloroethane	2.5	<2.5	UD	1.9	2.5	5.0
127-18-4	Tetrachloroethene	2.5	<2.5	UD	1.9	2.5	5.0
79-34-5	1,1,2,2-Tetrachloroethane	2.5	<2.5	UD	1.4	2.5	5.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	55	110	80 - 119	
Toluene-d8	50.0	52	103	89 - 112	
4-Bromofluorobenzene	50.0	52	103	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	444572	10.99	460789	10.98	
1,4-Difluorobenzene	795455	11.57	805842	11.56	
Chlorobenzene-d5	687121	14.25	708168	14.23	
1,4-Dichlorobenzene-d4	294560	16.52	312852	16.5	

* Values outside of QC limits

MW 21315

ORGANIC ANALYSIS DATA SHEET

IR89-GW101-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-02 File ID: 2LS014.D
 Sampled: 12/15/14 09:55 Prepared: 12/24/14 00:00 Analyzed: 12/24/14 10:50
 Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL
 Batch: 4L24005 Sequence: AA31887 Calibration: 1412083 Instrument: QVGCMs2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	1	<1.0	U	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	U	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	8.6		0.53	1.0	2.0
79-01-6	Trichloroethene	1	5.2		0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	56	112	80 - 119	
Toluene-d8	50.0	54	108	89 - 112	
4-Bromofluorobenzene	50.0	51	102	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	447451	11	460789	10.98	
1,4-Difluorobenzene	783148	11.57	805842	11.56	
Chlorobenzene-d5	691400	14.24	708168	14.23	
1,4-Dichlorobenzene-d4	291347	16.52	312852	16.5	

* Values outside of QC limits

Mw 211315

ORGANIC ANALYSIS DATA SHEET

IR89-GW94-14D
3

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-03 File ID: 2LS015.D
 Sampled: 12/15/14 10:20 Prepared: 12/24/14 00:00 Analyzed: 12/24/14 11:19
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L24005 Sequence: AA31887 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	1	<1.0	U	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	U	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	<1.0	U	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	56	113	80 - 119	
Toluene-d8	50.0	52	104	89 - 112	
4-Bromofluorobenzene	50.0	51	103	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	449860	11	460789	10.98	
1,4-Difluorobenzene	799445	11.57	805842	11.56	
Chlorobenzene-d5	680983	14.25	708168	14.23	
1,4-Dichlorobenzene-d4	294386	16.52	312852	16.5	

* Values outside of QC limits

MW-21315

ORGANIC ANALYSIS DATA SHEET

IR89-GW98-14D
4

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-04 File ID: 2LS016.D
 Sampled: 12/15/14 11:05 Prepared: 12/24/14 00:00 Analyzed: 12/24/14 11:48
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L24005 Sequence: AA31887 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	2	1.5	PD	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene	2	4.5	PD	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene	2	150	PD	1.1	2.0	4.0
79-01-6	Trichloroethene	2	27	PD	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane	2	<2.0	UD	1.5	2.0	4.0
127-18-4	Tetrachloroethene	2	<2.0	UD	1.5	2.0	4.0
79-34-5	1,1,2,2-Tetrachloroethane	2	<2.0	UD	1.1	2.0	4.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	56	113	80 - 119	
Toluene-d8	50.0	52	105	89 - 112	
4-Bromofluorobenzene	50.0	51	102	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	443298	11	460789	10.98	
1,4-Difluorobenzene	796519	11.57	805842	11.56	
Chlorobenzene-d5	684380	14.25	708168	14.23	
1,4-Dichlorobenzene-d4	295495	16.52	312852	16.5	

* Values outside of QC limits

MW Z1315

ORGANIC ANALYSIS DATA SHEET

IR89-GW98D-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-05 File ID: 2LU009.D
 Sampled: 12/15/14 11:10 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 13:06
 Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL
 Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SSH	1.8	✓	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene	1	5.8	✗	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene	2	170	✗	1.1	2.0	4.0
79-01-6	Trichloroethene	2	26	✗	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane	2	<2.0	UD	1.5	2.0	4.0
127-18-4	Tetrachloroethene	2	<2.0	UD	1.5	2.0	4.0
79-34-5	1,1,2,2-Tetrachloroethane	2	<2.0	UD	1.1	2.0	4.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	67	133	80 - 119	*
Toluene-d8	50.0	57	114	89 - 112	*
4-Bromofluorobenzene	50.0	50	100	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	363746	10.98	460789	10.98	
1,4-Difluorobenzene	732773	11.55	805842	11.56	
Chlorobenzene-d5	717423	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	319217	16.5	312852	16.5	

* Values outside of QC limits

Mw21315

ORGANIC ANALYSIS DATA SHEET

IR89-GW98D-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86

Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-05RE1 File ID: 2AA018.D

Sampled: 12/15/14 11:10 Prepared: 01/06/15 00:00 Analyzed: 01/06/15 15:56

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: SA06013 Sequence: AA32037 Calibration: 1501002 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	H T	2	<2.0 UJ	UDQ	1.4	2.0
156-60-5	trans-1,2-Dichloroethene		2	3.7 J	JDQ	1.5	2.0
156-59-2	cis-1,2-Dichloroethene		2	120 J	DCQ	1.1	2.0
79-01-6	Trichloroethene		2	23 J	DQ	1.8	2.0
79-00-5	1,1,2-Trichloroethane		2	<2.0 UJ	UDQ	1.5	2.0
127-18-4	Tetrachloroethene		2	<2.0	UDQ	1.5	2.0
79-34-5	1,1,2,2-Tetrachloroethane		2	<2.0	UDQ	1.1	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	47	94	80 - 119	
Toluene-d8	50.0	46	92	89 - 112	
4-Bromofluorobenzene	50.0	49	97	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	383965	10.97	270652	10.97	
1,4-Difluorobenzene	699310	11.55	508133	11.55	
Chlorobenzene-d5	624379	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	270928	16.49	274662	16.5	

* Values outside of QC limits

Nov 21 2015

ORGANIC ANALYSIS DATA SHEET

IR89-GW93-14D
6

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-06 File ID: 2LU010.D
 Sampled: 12/15/14 11:10 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 13:36
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	COH	<1.0	UQ	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	UQ	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	<1.0	UQ	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	67	135	80 - 119	*
Toluene-d8	50.0	57	115	89 - 112	*
4-Bromofluorobenzene	50.0	49	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	366948	10.97	460789	10.98	
1,4-Difluorobenzene	724075	11.55	805842	11.56	
Chlorobenzene-d5	720159	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	325092	16.5	312852	16.5	

* Values outside of QC limits

MW 21315

ORGANIC ANALYSIS DATA SHEET

IR89-GW99-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-07 File ID: 2LU011.D
 Sampled: 12/15/14 12:00 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 14:05

Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL

Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	COH	<1.0	UQ	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	UQ	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	<1.0	UQ	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	68	137	80 - 119	*
Toluene-d8	50.0	57	115	89 - 112	*
4-Bromofluorobenzene	50.0	49	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	361896	10.98	460789	10.98	
1,4-Difluorobenzene	721179	11.55	805842	11.56	
Chlorobenzene-d5	715326	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	320673	16.5	312852	16.5	

* Values outside of QC limits

Nov 13, 15

ORGANIC ANALYSIS DATA SHEET

IR89-GW92-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-08 File ID: 2LU012.D

Sampled: 12/15/14 12:10 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 14:34

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SS4	2	80 ✓	DO	1.4	2.0
156-60-5	trans-1,2-Dichloroethene	↓	2	14 ↓	DO	1.5	2.0
156-59-2	cis-1,2-Dichloroethene	↓	2	170 ↓	DO	1.1	2.0
79-01-6	Trichloroethene		2	<2.0	UD	1.8	2.0
79-00-5	1,1,2-Trichloroethane		2	<2.0	UD	1.5	2.0
127-18-4	Tetrachloroethene		2	<2.0	UD	1.5	2.0
79-34-5	1,1,2,2-Tetrachloroethane		2	<2.0	UD	1.1	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	69	137	80 - 119	*
Toluene-d8	50.0	58	115	89 - 112	*
4-Bromofluorobenzene	50.0	49	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	360063	10.98	460789	10.98	
1,4-Difluorobenzene	723700	11.55	805842	11.56	
Chlorobenzene-d5	728040	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	324031	16.5	312852	16.5	

* Values outside of QC limits

MW 21315

ORGANIC ANALYSIS DATA SHEET

IR89-GW92-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-08RE1 File ID: 2AA019.D
 Sampled: 12/15/14 12:10 Prepared: 01/06/15 00:00 Analyzed: 01/06/15 16:26
 Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL

Batch: 5A06013 Sequence: AA32037 Calibration: 1501002 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	HT	2	44 J	DO	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene		2	9.4 J	DO	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene		2	110 J	DO	1.1	2.0	4.0
79-01-6	Trichloroethene		2	<2.0 NJ	UDQ	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane		2	<2.0	UDQ	1.5	2.0	4.0
127-18-4	Tetrachloroethene		2	2.0	UDQ	1.5	2.0	4.0
79-34-5	1,1,2,2-Tetrachloroethane		2	<2.0	UDQ	1.1	2.0	4.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	47	93	80 - 119	
Toluene-d8	50.0	45	91	89 - 112	
4-Bromofluorobenzene	50.0	48	97	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	384882	10.98	270652	10.97	
1,4-Difluorobenzene	701561	11.55	508133	11.55	
Chlorobenzene-d5	619839	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	265328	16.49	274662	16.5	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET

IR89-GW92D-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-09 File ID: 2LU013.D
 Sampled: 12/15/14 12:15 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 15:04
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	SSH	2	89 J	DQ	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene		2	18 J	DQ	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene	↓	2	230 J	DQ	1.1	2.0	4.0
79-01-6	Trichloroethene		2	<2.0	UD	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane		2	<2.0	UD	1.5	2.0	4.0
127-18-4	Tetrachloroethene		2	<2.0	UD	1.5	2.0	4.0
79-34-5	1,1,2,2-Tetrachloroethane		2	<2.0	UD	1.1	2.0	4.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	67	134	80 - 119	*
Toluene-d8	50.0	58	115	89 - 112	*
4-Bromofluorobenzene	50.0	51	102	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	363725	10.98	460789	10.98	
1,4-Difluorobenzene	717156	11.55	805842	11.56	
Chlorobenzene-d5	723583	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	324974	16.5	312852	16.5	

* Values outside of QC limits

Nov 21 2015

ORGANIC ANALYSIS DATA SHEET

IR89-GW92D-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-09RE1 File ID: 2AB007.D
 Sampled: 12/15/14 12:15 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 10:40
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 5A07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

9RE
Use original results

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	H T	2	60 ↓	DQ	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene	↓	2	14 ↓	DQ	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene	↓	2	170 ↓	DQ	1.1	2.0	4.0
79-01-6	Trichloroethene	↓	2	<2.0 UJ	UDQ	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane	↓	2	<2.0 ↓	UDQ	1.5	2.0	4.0
127-18-4	Tetrachloroethene	↓	2	<2.0 ↓	UDQ	1.5	2.0	4.0
79-34-5	1,1,2,2-Tetrachloroethane	↓	2	<2.0 ↓	UDQ	1.1	2.0	4.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	47	94	80 - 119	
Toluene-d8	50.0	45	91	89 - 112	
4-Bromofluorobenzene	50.0	49	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	386547	10.98	270652	10.97	
1,4-Difluorobenzene	708658	11.55	508133	11.55	
Chlorobenzene-d5	623167	14.22	626993	14.22	
1,4-Dichlorobenzene-d4	267211	16.5	274662	16.5	

* Values outside of QC limits

NW 21315

ORGANIC ANALYSIS DATA SHEET

IR89-GW100-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-10 File ID: 2LU014.D
 Sampled: 12/15/14 12:55 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 15:33
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	SSH	42	J	DO	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene	↓	20	↓	DO	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene	↓	200	↓	DO	1.1	2.0	4.0
79-01-6	Trichloroethene	↓	17	J	DO	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane	2	<2.0	UD	1.5	2.0	4.0	
127-18-4	Tetrachloroethene	2	<2.0	UD	1.5	2.0	4.0	
79-34-5	1,1,2,2-Tetrachloroethane	2	<2.0	UD	1.1	2.0	4.0	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	70	139	80 - 119	*
Toluene-d8	50.0	57	114	89 - 112	*
4-Bromofluorobenzene	50.0	51	103	85 - 114	

* Values outside of QC limits

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	349240	10.98	460789	10.98	
1,4-Difluorobenzene	718717	11.55	805842	11.56	
Chlorobenzene-d5	710138	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	318832	16.5	312852	16.5	

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ORGANIC ANALYSIS DATA SHEET

IR89-GW100-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 80
 Matrix: Ground Water Laboratory ID: A407473-10RE1 File ID: 2AB008.D
 Sampled: 12/15/14 12:55 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 11:10
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: SA07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	HT	26	J	DQ	1.4	2.0	4.0
156-60-5	trans-1,2-Dichloroethene		14	J	DQ	1.5	2.0	4.0
156-59-2	cis-1,2-Dichloroethene		150	J	DQ	1.1	2.0	4.0
79-01-6	Trichloroethene		15	J	DQ	1.8	2.0	4.0
79-00-5	1,1,2-Trichloroethane		<2.0	WJ	UDQ	1.5	2.0	4.0
127-18-4	Tetrachloroethene		<2.0	J	UDQ	1.5	2.0	4.0
79-34-5	1,1,2,2-Tetrachloroethane		<2.0	J	UDQ	1.1	2.0	4.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	48	96	80 - 119	
Toluene-d8	50.0	45	90	89 - 112	
4-Bromofluorobenzene	50.0	49	98	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	385902	10.98	270652	10.97	
1,4-Difluorobenzene	710206	11.55	508133	11.55	
Chlorobenzene-d5	629209	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	268826	16.49	274662	16.5	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET

IR89-GW90-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-11 File ID: 2LU015.D
 Sampled: 12/15/14 13:15 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 16:02
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SSH	1	70	Q	0.71	1.0
156-60-5	trans-1,2-Dichloroethene	↓	1	18	Q	0.73	1.0
156-59-2	cis-1,2-Dichloroethene	↓	1	100	Q	0.53	1.0
79-01-6	Trichloroethene		1	<1.0	U	0.89	1.0
79-00-5	1,1,2-Trichloroethane		1	<1.0	U	0.76	1.0
127-18-4	Tetrachloroethene		1	<1.0	U	0.76	1.0
79-34-5	1,1,2,2-Tetrachloroethane		1	<1.0	U	0.54	1.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	69	137	80 - 119	*
Toluene-d8	50.0	57	115	89 - 112	*
4-Bromofluorobenzene	50.0	51	101	85 - 114	

* Values outside of QC limits

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	356189	10.98	460789	10.98	
1,4-Difluorobenzene	722438	11.55	805842	11.56	
Chlorobenzene-d5	712516	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	322638	16.5	312852	16.5	

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ORGANIC ANALYSIS DATA SHEET

IR89-GW90-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-11RE1 File ID: 2AA016.D
 Sampled: 12/15/14 13:15 Prepared: 01/06/15 00:00 Analyzed: 01/06/15 14:57
 Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL
 Batch: 5A06013 Sequence: AA32037 Calibration: 1501002 Instrument: OVGCMS2

use original results

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	HT	1	40 J	Q	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene		1	12 J	Q	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene		1	69 J	Q	0.53	1.0	2.0
79-01-6	Trichloroethene		1	<1.0 J	UQ	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane		1	<1.0 J	UQ	0.76	1.0	2.0
127-18-4	Tetrachloroethene		1	<1.0 J	UQ	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane		1	0.88 J	JQ	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	46	92	80 - 119	
Toluene-d8	50.0	45	90	89 - 112	
4-Bromofluorobenzene	50.0	48	97	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	386658	10.98	270652	10.97	
1,4-Difluorobenzene	704190	11.55	508133	11.55	
Chlorobenzene-d5	612508	14.22	626993	14.22	
1,4-Dichlorobenzene-d4	264457	16.5	274662	16.5	

* Values outside of QC limits

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ORGANIC ANALYSIS DATA SHEET

IR89-GW95-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86

Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-12 File ID: 2LU016.D

Sampled: 12/15/14 13:55 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 16:32

Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL

Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SSH	20	120	14	20	40
156-60-5	trans-1,2-Dichloroethene	↓	20	360	15	20	40
156-59-2	cis-1,2-Dichloroethene	↓	20	2100	11	20	40
79-01-6	Trichloroethene	20	<20	UD	18	20	40
79-00-5	1,1,2-Trichloroethane	20	<20	UD	15	20	40
127-18-4	Tetrachloroethene	20	<20	UD	15	20	40
79-34-5	1,1,2,2-Tetrachloroethane	20	<20	UD	11	20	40

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	68	135	80 - 119	*
Toluene-d8	50.0	58	117	89 - 112	*
4-Bromofluorobenzene	50.0	50	101	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	356744	10.98	460789	10.98	
1,4-Difluorobenzene	709143	11.55	805842	11.56	
Chlorobenzene-d5	716400	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	321799	16.5	312852	16.5	

* Values outside of QC limits

ORGANIC ANALYSIS DATA SHEET

IR89-GW95-14D
12RE

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-12RE1 File ID: 2AB009.D

Sampled: 12/15/14 13:55 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 11:39

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: 5A07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	H T	20	74	DQ	14	20
156-60-5	trans-1,2-Dichloroethene		20	270	DQ	15	20
156-59-2	cis-1,2-Dichloroethene		20	1500	DQ	11	20
79-01-6	Trichloroethene		20	19	DQ	18	20
79-00-5	1,1,2-Trichloroethane		20	<20	UJ	15	20
127-18-4	Tetrachloroethene		20	<20	UDQ	15	20
79-34-5	1,1,2,2-Tetrachloroethane		20	<20	UDQ	11	20

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	48	96	80 - 119	
Toluene-d8	50.0	46	92	89 - 112	
4-Bromofluorobenzene	50.0	50	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	379151	10.98	270652	10.97	
1,4-Difluorobenzene	706306	11.55	508133	11.55	
Chlorobenzene-d5	627150	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	265816	16.5	274662	16.5	

* Values outside of QC limits

Nov 21 13 15

ORGANIC ANALYSIS DATA SHEET

IR89-GW87-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-13 File ID: 2LU017.D

Sampled: 12/15/14 14:05 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 17:01

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SSH	1	66	Q	0.71	1.0
156-60-5	trans-1,2-Dichloroethene	↓	1	10	Q	0.73	1.0
156-59-2	cis-1,2-Dichloroethene	↓	1	44	Q	0.53	1.0
79-01-6	Trichloroethene		1	<1.0	U	0.89	1.0
79-00-5	1,1,2-Trichloroethane		1	<1.0	U	0.76	1.0
127-18-4	Tetrachloroethene		1	<1.0	U	0.76	1.0
79-34-5	1,1,2,2-Tetrachloroethane		1	<1.0	U	0.54	1.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	67	134	80 - 119	*
Toluene-d8	50.0	58	116	89 - 112	*
4-Bromofluorobenzene	50.0	49	98	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	355903	10.98	460789	10.98	
1,4-Difluorobenzene	709122	11.55	805842	11.56	
Chlorobenzene-d5	717317	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	322737	16.5	312852	16.5	

* Values outside of QC limits

NWZ1315

ORGANIC ANALYSIS DATA SHEET

IR89-GW87-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-13RE1 File ID: 2AB010.D
 Sampled: 12/15/14 14:05 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 12:09
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: SA07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

Use original results

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	HT	39	J	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	6.9	Q	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	31	Q	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	UJ	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	UQ	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	UQ	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	UQ	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	47	95	80 - 119	
Toluene-d8	50.0	45	90	89 - 112	
4-Bromofluorobenzene	50.0	50	100	85 - 114	
INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	389408	10.98	270652	10.97	
1,4-Difluorobenzene	709313	11.55	508133	11.55	
Chlorobenzene-d5	639077	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	263290	16.5	274662	16.5	

* Values outside of QC limits

MW 21.315

ORGANIC ANALYSIS DATA SHEET

IR89-GW89-14D
14

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-14 File ID: 2LS017.D

Sampled: 12/15/14 14:25 Prepared: 12/24/14 00:00 Analyzed: 12/24/14 12:17

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: 4L24005 Sequence: AA31887 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	1	<1.0	U	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	U	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	BSH	0.64	J	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	56	111	80 - 119	
Toluene-d8	50.0	52	104	89 - 112	
4-Bromofluorobenzene	50.0	48	97	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	442840	11	460789	10.98	
1,4-Difluorobenzene	798741	11.57	805842	11.56	
Chlorobenzene-d5	723791	14.25	708168	14.23	
1,4-Dichlorobenzene-d4	300481	16.52	312852	16.5	

* Values outside of QC limits

μz1315

ORGANIC ANALYSIS DATA SHEET

IR89-GW96-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-15 File ID: 2LU018.D

Sampled: 12/15/14 14:50 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 17:30

Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL

Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMs2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	SSH	1	4.0 T	X	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	↓	1	0.73	X	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	↓	1	2.8	Q	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0	
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0	
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0	
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0	

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	68	136	80 - 119	*
Toluene-d8	50.0	57	115	89 - 112	*
4-Bromofluorobenzene	50.0	50	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	349167	10.98	460789	10.98	
1,4-Difluorobenzene	712183	11.55	805842	11.56	
Chlorobenzene-d5	721045	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	324637	16.5	312852	16.5	

* Values outside of QC limits

MWZ1315

15RE

ORGANIC ANALYSIS DATA SHEET
EPA 8260B

IR89-GW96-14D

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 86

Matrix: Ground Water Laboratory ID: A407473-15RE1 File ID: 2AB011.D
 Sampled: 12/15/14 14:50 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 12:38
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: SA07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	H T	1	2.6 J	Q	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene		1	<1.0 UJ	UQ	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene		1	2.1 J	Q	0.53	1.0	2.0
79-01-6	Trichloroethene		1	<1.0 UJ	UQ	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane		1	<1.0 J	UQ	0.76	1.0	2.0
127-18-4	Tetrachloroethene		1	<1.0 J	UQ	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	↓	1	<1.0 J	UQ	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	48	96	80 - 119	
Toluene-d8	50.0	45	90	89 - 112	
4-Bromofluorobenzene	50.0	49	98	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	381186	10.98	270652	10.97	
1,4-Difluorobenzene	713873	11.56	508133	11.55	
Chlorobenzene-d5	631572	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	264171	16.5	274662	16.5	

* Values outside of QC limits

MW 21315

ORGANIC ANALYSIS DATA SHEET
EPA 8260B

IR89-GW86-14D

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-16 File ID: 2LU019.D
 Sampled: 12/15/14 15:00 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 18:00
 Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL
 Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SSH	110	Q	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	15	Q	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	84	Q	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	69	138	80 - 119	*
Toluene-d8	50.0	58	116	89 - 112	*
4-Bromofluorobenzene	50.0	49	98	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	348926	10.98	460789	10.98	
1,4-Difluorobenzene	710884	11.55	805842	11.56	
Chlorobenzene-d5	726072	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	318216	16.5	312852	16.5	

* Values outside of QC limits

2/13/15

ORGANIC ANALYSIS DATA SHEET

IR89-GW86-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-16RE1 File ID: 2AB012.D
 Sampled: 12/15/14 15:00 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 13:08
 Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL

Batch: SA07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	HT	1	65	Q	0.71	1.0
156-60-5	trans-1,2-Dichloroethene	1	11	Q	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	58	Q	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	UQ	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	UQ	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	UQ	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	UQ	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	48	95	80 - 119	
Toluene-d8	50.0	46	91	89 - 112	
4-Bromofluorobenzene	50.0	48	96	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	382834	10.98	270652	10.97	
1,4-Difluorobenzene	702965	11.55	508133	11.55	
Chlorobenzene-d5	636453	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	268907	16.5	274662	16.5	

* Values outside of QC limits

mz 213/15

ORGANIC ANALYSIS DATA SHEET

IR89-GW97-14D

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-17 File ID: 2LU020.D

Sampled: 12/15/14 15:30 Prepared: 12/26/14 00:00 Analyzed: 12/26/14 18:29

Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL

Batch: 4L26012 Sequence: AA31912 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	SSH	210 J	DQ	1.8	2.5	5.0
156-60-5	trans-1,2-Dichloroethene	↓	69	DQ	1.8	2.5	5.0
156-59-2	cis-1,2-Dichloroethene	↓	420	DQ	1.3	2.5	5.0
79-01-6	Trichloroethene	2.5	<2.5	UD	2.2	2.5	5.0
79-00-5	1,1,2-Trichloroethane	2.5	<2.5	UD	1.9	2.5	5.0
127-18-4	Tetrachloroethene	2.5	<2.5	UD	1.9	2.5	5.0
79-34-5	1,1,2,2-Tetrachloroethane	2.5	<2.5	UD	1.4	2.5	5.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	68	135	80 - 119	*
Toluene-d8	50.0	57	115	89 - 112	*
4-Bromofluorobenzene	50.0	50	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	351483	10.98	460789	10.98	
1,4-Difluorobenzene	713616	11.55	805842	11.56	
Chlorobenzene-d5	712727	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	322059	16.5	312852	16.5	

* Values outside of QC limits

mwz1315

17RE

ORGANIC ANALYSIS DATA SHEET
EPA 8260B

IR89-GW97-14D

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89
 Matrix: Ground Water Laboratory ID: A407473-17RE1 File ID: 2AB013.D
 Sampled: 12/15/14 15:30 Prepared: 01/07/15 00:00 Analyzed: 01/07/15 13:37
 Solids: Preparation: EPA 5030B MS Initial/Final: 5 mL / 5 mL
 Batch: SA07017 Sequence: AA32053 Calibration: 1501002 Instrument: OVGCMS2

*17RE
Original
results*

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ	
75-01-4	Vinyl chloride	HT	2.5	130 J	DQ	1.8	2.5	5.0
156-60-5	trans-1,2-Dichloroethene		2.5	50 J	DQ	1.8	2.5	5.0
156-59-2	cis-1,2-Dichloroethene		2.5	300 J	DQ	1.3	2.5	5.0
79-01-6	Trichloroethene		2.5	<2.5 MJ	UDQ	2.2	2.5	5.0
79-00-5	1,1,2-Trichloroethane		2.5	<2.5 MJ	UDQ	1.9	2.5	5.0
127-18-4	Tetrachloroethene		2.5	<2.5 MJ	UDQ	1.9	2.5	5.0
79-34-5	1,1,2,2-Tetrachloroethane		2.5	<2.5 MJ	UDQ	1.4	2.5	5.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	48	96	80 - 119	
Toluene-d8	50.0	46	92	89 - 112	
4-Bromofluorobenzene	50.0	49	98	85 - 114	
INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	383760	10.98	270652	10.97	
1,4-Difluorobenzene	703013	11.56	508133	11.55	
Chlorobenzene-d5	631245	14.23	626993	14.22	
1,4-Dichlorobenzene-d4	266337	16.5	274662	16.5	

* Values outside of QC limits

~wz1315

ORGANIC ANALYSIS DATA SHEET
EPA 8260B

IR89-TB-121514

Laboratory:	<u>ENCO Orlando</u>	SDG:	<u>A407473-CTO-WE86</u>
Client:	<u>CH2M Hill, Inc. (CH025)</u>	Project:	<u>CTO-WE86 MCB Camp Lejeune Site 89</u>
Matrix:	<u>Ground Water</u>	Laboratory ID:	<u>A407473-18</u>
Sampled:	<u>12/15/14 16:30</u>	Prepared:	<u>12/26/14 00:00</u>
Solids:		Preparation:	<u>EPA 5030B MS</u>
Batch:	<u>4L26012</u>	Sequence:	<u>AA31912</u>
		Calibration:	<u>1412083</u>
		Instrument:	<u>OVGCMS2</u>

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	100	<1.0 NS	UQ	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	UQ	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	<1.0	UQ	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	67	134	80 - 119	*
Toluene-d8	50.0	58	115	89 - 112	*
4-Bromofluorobenzene	50.0	50	99	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	367667	10.97	460789	10.98	
1,4-Difluorobenzene	720951	11.55	805842	11.56	
Chlorobenzene-d5	723359	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	326779	16.5	312852	16.5	

* Values outside of QC limits

mw 2/13/15

ORGANIC ANALYSIS DATA SHEET

IR89-EB-121614

EPA 8260B

Laboratory: ENCO Orlando SDG: A407473-CTO-WE86
 Client: CH2M Hill, Inc. (CH025) Project: CTO-WE86 MCB Camp Lejeune Site 89

Matrix: Ground Water Laboratory ID: A407473-19 File ID: 2LX017.D

Sampled: 12/16/14 08:30 Prepared: 12/29/14 00:00 Analyzed: 12/29/14 12:46

Solids: Preparation: EPA 5030B_MS Initial/Final: 5 mL / 5 mL

Batch: 4L29007 Sequence: AA31927 Calibration: 1412083 Instrument: OVGCMS2

CAS NO.	COMPOUND	DILUTION	CONC. (ug/L)	Q	DL	LOD	LOQ
75-01-4	Vinyl chloride	1	<1.0	UQ	0.71	1.0	2.0
156-60-5	trans-1,2-Dichloroethene	1	<1.0	UQ	0.73	1.0	2.0
156-59-2	cis-1,2-Dichloroethene	1	<1.0	U	0.53	1.0	2.0
79-01-6	Trichloroethene	1	<1.0	U	0.89	1.0	2.0
79-00-5	1,1,2-Trichloroethane	1	<1.0	U	0.76	1.0	2.0
127-18-4	Tetrachloroethene	1	<1.0	U	0.76	1.0	2.0
79-34-5	1,1,2,2-Tetrachloroethane	1	<1.0	U	0.54	1.0	2.0

SYSTEM MONITORING COMPOUND	ADDED (ug/L)	CONC (ug/L)	% REC	QC LIMITS	Q
Dibromofluoromethane	50.0	67	133	80 - 119	*
Toluene-d8	50.0	58	116	89 - 112	*
4-Bromofluorobenzene	50.0	50	101	85 - 114	

INTERNAL STANDARD	AREA	RT	REF AREA	REF RT	Q
Pentafluorobenzene	353232	10.98	460789	10.98	
1,4-Difluorobenzene	688022	11.56	805842	11.56	
Chlorobenzene-d5	703878	14.23	708168	14.23	
1,4-Dichlorobenzene-d4	320986	16.5	312852	16.5	

* Values outside of QC limits

mw 2/13/15